

REMARKS

By the present Amendment, claims 1-10 are cancelled and claims 11-25 are added. This leaves claims 11-25 pending in the application, with claims 11 and 19 being independent.

Substitute Specification

The specification is revised to eliminate grammatical and idiomatic errors in the originally presented specification. The number and nature of the changes made in the specification would render it difficult to consider the case and to arrange the papers for printing or copying. Thus, the substitute specification will facilitate processing of the application. The substitute specification includes no “new matter”. Pursuant to M.P.E.P. § 608.01(q), voluntarily filed, substitute specifications under these circumstances should normally be accepted. A marked-up copy of the original specification is appended hereto.

Drawing Objection

Fig. 1 is revised to identify more clearly the free-wheeling device with an arrowhead, and to add “56a” and a lead line for a free-wheeling sleeve, as described in the substitute specification.

Thus, the drawings more clearly comply with 37 C.F.R. §1.83(a).

Claim Objections and Rejections Under 35 U.S.C. § 112, Second Paragraph

Original claims 5, 8 and 9 are objected to as being informal and/or are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. By the present Amendment, the originally filed claims are rewritten to avoid the language alleged to be informal or indefinite in

the Office Action. All language of the presently pending claims is now believed to be clear and definite.

Thus, the pending claims are formal and comply with 35 U.S.C. § 112.

Rejections Under 35 U.S.C. §102 and §103

New independent claim 11 covers a filter device comprising a filter housing 10 with an unfiltered fluid inlet 20, a filtered fluid outlet 22 and a backwash fluid outlet 26. Filter elements 28 are in the housing receiving fluid flow in one direction for filtration and in an opposite direction for backwashing effective filter surfaces. A pivoting device 30 mounts the filter elements in the filter housing for sequential rotational movement about a pivot axis between filtration positions in which unfiltered fluid flows from the inside to outside through the filter elements and a backwashing position in which filtered fluid flows from the outside to inside through the filter elements. The pivot device having a rotatably mounted receiving part 32 mounting the fluid elements parallel to the pivot axis along a path coaxial to the pivot axis and has first and second end parts 40, 38. The filter elements extend between the end parts. The first end part 40 faces toward the fluid inlet and is rotatably guided along inside of the filter housing by a seal 42. A drive 34 is coupled to receiving part 32 to rotate the receiving part, includes a rod-shaped drive part 52 releasably connecting the first and second end parts and includes a pneumatic motor 34 producing alternating to and fro movements on an output part convertible into a constant drive movement in a drive direction of the drive part by a free wheel device 56.

By forming the filter device in this manner, the filter device can be more effectively sealed, can operate more efficiently, particularly for backwashing and requires only a relatively small installation space. These advantages are particularly enhanced by the flow through the

filter for filtration being from the inside out and for the backwashing flow being from the outside in such that the pressure of the filtered fluid can be used as the backwashing fluid and such that no additional backwashing fluid need be supplied.

Claims 1-6 and 9 stand rejected under 35 U.S.C. §102 as being anticipated by EP Patent No. 0 900 584 to Sindorf. The Sindorf patent is cited for a filter housing 1 with filter chambers 11, each containing a filter element 12. The housing allegedly has an inlet 5 and an outlet 6. The filter elements allegedly move in succession from filtration positions into a backwashing position and back by a pivoting device formed of header 3 and footer 2. Relative to claim 2, the receiving element 3, 2 allegedly is pivotally mounted within the housing 1 about an axis extending along longitudinal axis 10 and is pivoted by a rotary drive 4. Relative to claim 3, the Sindorf receiving element 3, 2 allegedly has two opposing ends between which the filter elements extend, with the bottom end having sealing means. Relative to claim 4, the Sindorf filter elements 12 are allegedly coaxial to the pivot axis including a rod-like drive part, with the Sindorf screw connection bearing 14 allegedly providing the detachable connection. Regarding claim 5, the Sindorf drive is allegedly connected to a pneumatic motor with back and forth motion converted by a free-wheeling device into a constant drive motion by the plate 17 and foot clamp 21. Regarding claim 6, the Sindorf device allegedly has a free-wheeling device formed by plate 17 and foot clamp 21 to drive the drive part in one direction. Relative to claim 9, the Sindorf patent is cited as disclosing the recited structures by the filter outlet 6, fluid outlet 28, fluid inlet 5, and drive 4, with the filter inlet and the fluid outlet located between the filter outlet and the drive.

Claim 8 stands rejected under 35 U.S.C. §103 as being unpatentable over the Sindorf patent. The Sindorf patent allegedly has a filter housing split in two parts at bearing ring 14, with

ring 14 being between its drive 4 and its outlet 6. In support of the rejection, it is alleged that it would be obvious to arrange the Sindorf outlet and bearing ring 14, as recited, as it only involves an obvious rearranging of parts.

Claims 7 and 10 stand rejected under 35 U.S.C. §103 as being unpatentable over the Sindorf patent in view of U.S. Patent Publication No. 2003/0213127 to Wnuk. In support of the rejection, it is alleged that it would be obvious to reverse the Sindorf flow and to locate the drive at its bottom rather than at the top. The Wnuk publication is cited for the use of conical or frustoconical filter elements that are alleged to be obvious to use in the Sindorf device, with the wide part of the conical element opening to the pivot device.

The Sindorf patent discloses an arrangement in which filtration of the fluid to be filtered entering through inlet 5 passes through the filter elements 12 from the outside to the inside, as shown by the right-hand filter in Fig. 1 and the three right most filter elements in Fig. 4. The filtered fluid then passes through the interior of the filter element, and is conveyed out outlet 6. The filter element shown in the left-hand side of Figs. 1 and 4 is being backwashed by compressed air being forced upwardly through the interior of the filter element causing the debris on the outside of the filter to be discharged through passage opening 25 and out mud drain valve 34, 37. A pneumatic motor formed by a rotary drive 4 is coupled to a clutch plate 13 with a set 16 and clutch opening 15 with the drive also including a bearing ring 14.

The Sindorf drive arrangement does not appear to rotate a receiving part holding the filter element where the drive includes a rod-shaped drive part releasably connecting the first and second end parts and with a free wheel device. The longitudinal axis 10 referred to does not appear to be part of the Sindorf drive and does not provide a releasable connection.

Moreover, as noted above, the filtering and backwash flow through the Sindorf filter elements 12 is opposite to that claimed, and a separate fluid compressed over is used for backwashing, not filtered fluid from the filter elements, as claimed.

Claim 11 is also distinguished by the first end part facing the inlet and rotatably guided from the inside surface of the filter housing by a seal. The Sindorf header 3 and footer 3, alleged to correspond to the claimed end parts, do not have one thereof facing its unfiltered fluid inlet 5 and do not have the filter element extending between them. No such arrangement is disclosed or rendered obvious by the Sindorf patent.

Thus, the subject matter of claim 11 is not anticipated or rendered obvious by the Sindorf patent. None of the other cited patents cure these deficiencies in the Sindorf patent.

New independent claim 19 covers a filter device comprising a filter housing 10 having an unfiltered fluid inlet 20, a filtered outlet 22 and a backwash filter outlet 26. Filter elements 18 are in the filter housing receiving fluid flow in one direction for filtration and in an opposite direction for backwashing effective filter surfaces. A pivoting device 30 mounts the filter elements in the filter housing for sequential rotational movement about a pivot axis between filtration positions in which unfiltered fluid flows from inside to outside through the filter elements and a backwashing position in which the filtered fluid flows from outside to inside through the filter elements. The pivot axis has a rotatably mounted receiving part 32 mounting the filter elements parallel to the filter axis along a path coaxial to the pivot axis and having first and second end parts 40, 38. The filter elements extend between the end parts. The first end part 40 faces toward the fluid inlet and is rotatably guided along an inside of the filter having the seal 42. A drive 34 is coupled to the receiving part to rotate the receiving part. A lower part of the

filter housing has an arcuate-shaped recess over which several of the filter elements can be located simultaneously in the filter position with their lower open cross sections in fluid communication with that arcuate-shaped recess, and has a backwash recess over with the filter elements are sequentially located in the backwashing position with the free open cross sections in fluid communication with it. The arcuate-shaped recess is in fluid communication with the fluid inlet. The backwash recess is in fluid communication with the backwash fluid outlet.

In addition to certain advantages discussed above relative to claim 11, claim 18 is further distinguishable by the Sindorf patent by the arcuate-shaped recess by which the fluid inlet is in fluid communication with the inside of the filter elements in the filtration positions simultaneously. In contrast, no arcuate-shaped recess is provided in the Sindorf system in which, as best illustrated in Fig. 4, the inlet 5 passes fluid from the lateral and outside surfaces of the filter elements 11.

Claims 12-18 and 20-25, being dependent upon claims 11 and 19, respectively, are also allowable for the above reasons. Moreover, these dependent claims recite additional features further distinguishing them over the cited patents.

Claims 12 and 20 are further distinguishable by the free wheel device having a free wheel sleeve delivering power in one direction up to a set torque and not applying drive torque in an opposite direction. Such arrangement is not shown to be disclosed or rendered obvious by the Sindorf patent.

Claims 13 and 21 are further distinguishable by the filter elements being conical and arranged in pairs where the filter elements of each pair being diametrically opposite one another within the overall claimed combination.

Claims 14 and 22 are further distinguishable by the second housing part having a cavity with an axial extension corresponding to the overall length of each filter element and being above the filter elements. No such cavity is disclosed or rendered obvious by the Sindorf patent.

Claims 15 and 23 are further distinguishable by the fluid inlet and the backwash fluid outlet being located in a first part of the housing extending between the filtered fluid outlet and the drive. Such orientation is not disclosed or rendered obvious, particularly since the Sindorf drive is located at the top of the filter housing remote from the fluid inlet 5 and the backwash outlet 8.

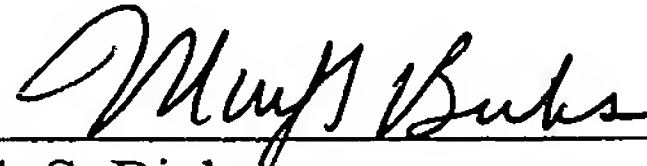
Claims 16 and 24 are further distinguishable by the filter element comprising a bar screen tube filter element within the overall claimed combination.

Claim 17 is further distinguishable by the arcuate-shaped recess for the reasons discussed above relative to claim 19.

Claims 18 and 25 are further distinguishable by the exterior surfaces of filter elements being in fluid communication to allow filtered fluid to be used as backwashing fluid. In the Sindorf device, the exterior of the filter element in the backwashing position is isolated from and is not in fluid communication with the exteriors of the other filter elements.

In view of the foregoing, claims 11-25 are allowable. Prompt and favorable action is solicited.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Mark S. Bicks", written over a horizontal line.

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